Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2024

Subject Code:3160513 Date:20-05-2024

Subject Name:Waste Water Engineering

Time:10:30 AM TO 01:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	Explain sampling protocol for waste water treatment.	**03**
	(b)	Explain aerated lagoons.	**04**
	(c)	Discuss steps involved in waste water treatment.	**07**
Q.2	**(a)**	What are oxidation ditches?	**03**
	(b)	Discuss sequential batch reactor.	**04**
	(c)	Explain theory for activated sludge process (ASP).	**07**
		OR	
	(c)	Explain mass balance and design for trickling filter (TF).	**07**
Q.3	**(a)**	Discuss effect of various parameters on anaerobic treatment?	**03**
	(b)	Explain the concept of anaerobic contact process.	**04**
	(c)	Explain fixed film reactor in Anaerobic treatment of wastewater.	**07**
		OR	
Q.3	**(a)**	List out conditions for efficient anaerobic treatment.	**03**
	(b)	Explain static granular bed reactor.	**04**
	(c)	Explain coagulation and flocculation treatment of wastewater.	**07**
Q.4	**(a)**	Discuss the Indian standards for disposal of effluent water in the streams.	**03**
	(b)	Explain root zone technology.	**04**
	(c)	Discuss the treatment methodology for dyes industry wastewater.	**07**
		OR	
Q.4	**(a)**	Justify importance of waste water reuse.	**03**
	(b)	Explain importance of ground water recharge of reclaimed waste water.	**04**
	(c)	Discuss recent advancement in technologies for waste water treatment.	**07**
Q.5	**(a)**	Enlist waste water characteristics.	**03**
	(b)	What are special treatments available for waste water treatment.	**04**
	(c)	Discuss the treatment methodology for steel industry wastewater.	**07**
		OR	
Q.5	**(a)**	Why agriculture irrigation of reclaimed waste water is important?	**03**
	(b)	Explain working of duckweed pond.	**04**
	(c)	Discuss the treatment methodology for oil refinery industry wastewater.	**07**